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USSN: 10/596,623

## I. AMENDMENTS

## **AMENDMENTS TO THE CLAIMS**

Please amend claims 1, 3, 4, and 12, as shown below.

1. (Currently amended) An antimicrobial composition, the composition comprising a divalent cation and a peptide, the peptide being non-glycosylated, less than about 100 amino acids, and comprising an amino acid sequence selected from the group consisting of:

Ala Val Glu Ser Thr Val Ala Thr Leu Glu Ala Ser(I) Pro Glu Val IIe Glu Ser Pro Pro Glu, (SEQ ID NO:1)

Ala Val Glu Ser Thr Val Ala Thr Leu Glu Asp Ser(I) Pro Glu Val Ile Glu Ser Pro Pro Glu, (SEQ ID NO.2)

Ala Val Glu Ser Thr Val Ala Thr Leu Glu Ala Ser(P) Pro Glu Val Ile Glu Ser Pro Pro Glu (SEQ ID NO:1); and

Ala Val Glu Ser Thr Val Ala Thr Leu Glu Asp Ser(P) Pro Glu Val Ile Glu Ser Pro Pro Glu (SEQ ID NO:2),

and conservative substitutions therein.

- 2. (Original) An antimicrobial composition according to claim 1 wherein the peptide is less than about 70 amino acids.
- 3. (Currently amended) An antimicrobial composition according to <u>claim 1</u> any one of claims 1 or 2 wherein the peptide comprises an amino acid sequence selected from the group consisting of:

Ala Val Glu Ser Thr Val Ala Thr Leu Glu Ala Ser(I) Pro Glu Val Ilo Glu Ser Pro Pro Glu, (SEQ ID NO:1) and

Ala Val Glu Ser Thr Val Ala Thr Leu Glu Asp Ser(I) Pro Glu Val Ile Glu Ser Pro Pro Glu: (SEQ ID NO:2).

Ala Val Glu Ser Thr Val Ala Thr Leu Glu Ala Ser(P) Pro Glu Val Ile Glu Ser Pro Pro Glu (SEQ ID NO:1);

<u>and</u>

Ala Val Glu Ser Thr Val Ala Thr Leu Glu Asp Ser(P) Pro Glu Val Ile Glu Ser Pro Pro Glu (SEQ ID NO:2).

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4. (Currently amended) An antimicrobial composition according to <u>claim 1</u> any one of claims 1 or 2 wherein the peptide comprises an amino acid sequence selected from the group consisting of:

Met Ala Ile Pro Pro Lys Lys Asn Gln Asp Lys Thr Glu Ile Pro Thr Ile Asn Thr Ile Ala Ser Gly Glu Pro Thr Ser Thr Pro Thr Ile Glu Ala Val Glu Ser Thr Val Ala Thr Leu Glu Ala Ser(P) Pro Glu Val Ile Glu Ser Pro Pro Glu Ile Asn Thr Val Gln Val Thr Ser Thr Ala Val (SEQ ID NO:3);

Met Ala Ile Pro Pro Lys Lys Asn Gln Asp Lys Thr Glu Ile Pro Thr Ile Asn Thr Ile Ala Ser(P) Gly Glu Pro
Thr Ser Thr Pro Thr Ile Glu Ala Val Glu Ser Thr Val Ala Thr Leu Glu Ala Ser(P) Pro Glu Val Ile Glu Ser Pro Pro
Glu Ile Asn Thr Val Gln Val Thr Ser Thr Ala Val (SEQ ID NO:4);

Met Ala Ile Pro Pro Lys Lys Asn Gln Asp Lys Thr Glu Ile Pro Thr Ile Asn Thr Ile Ala Ser Gly Glu Pro Thr Ser Thr Pro Thr Thr Glu Ala Val Glu Ser Thr Val Ala Thr Leu Glu Asp Ser(P) Pro Glu Val Ile Glu Ser Pro Pro Glu Ile Asn Thr Val Gln Val Thr Ser Thr Ala Val (SEQ ID NO. 5);

Met Ala Ile Pro Pro Lys Lys Asn Gln Asp Lys Thr Glu Ile Pro Thr Ile Asn Thr Ile Ala Ser(P) Gly Glu Pro Thr Ser Thr Pro Thr Thr Glu Ala Val Glu Ser Thr Val Ala Thr Leu Glu Asp Ser(P) Pro Glu Val Ile Glu Ser Pro Pro Glu Ile Asn Thr Val Gln Val Thr Ser Thr Ala Val (SEQ ID NO. 6);

Thr Glu Ile Pro Thr Ile Asn Thr Ile Ala Ser Gly Glu Pro Thr Ser Thr Pro Thr Ile Glu Ala Val Glu Ser Thr Val Ala Thr Leu Glu Ala Ser(P) Pro Glu Val Ile Glu Ser Pro Pro Glu Ile Asn Thr Val Gln Val Thr Ser Thr Ala Val (SEQ ID NO. 7);

Thr Glu Ile Pro Thr Ile Asn Thr Ile Ala Ser(P) Gly Glu Pro Thr Ser Thr Pro Thr Ile Glu Ala Val Glu Ser

Thr Val Ala Thr Leu Glu Ala Ser(P) Pro Glu Val Ile Glu Ser Pro Pro Glu Ile Asn Thr Val Gln Val Thr Ser Thr Ala

Val (SEQ ID NO. 8);

Thr Glu Ile Pro Thr Ile Asn Thr Ile Ala Ser Gly Glu Pro Thr Ser Thr Pro Thr Thr Glu Ala Val Glu Ser Thr Val Ala Thr Leu Glu Asp Ser(P) Pro Glu Val Ile Glu Ser Pro Pro Glu Ile Asn Thr Val Gln Val Thr Ser Thr Ala Val (SEQ ID NO. 9);

Thr Glu Ile Pro Thr Ile Asn Thr Ile Ala Ser(P) Gly Glu Pro Thr Ser Thr Pro Thr Thr Glu Ala Val Glu Ser
Thr Val Ala Thr Leu Glu Asp Ser(P) Pro Glu Val Ile Glu Ser Pro Pro Glu Ile Asn Thr Val Gln Val Thr Ser Thr Ala
Val (SEQ ID NO. 10).

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Met Ala Ile Pro Pro Lys Lys Asn Glin Asp Lys Thr Glu Ile Pro Thr Ile Asn Thr Ile Ala Ser Gly Glu Pro Thr Ser Thr Pro Thr Ile Glu Ala Val Glu Ser Thr Val Ala Thr Leu Glu Ala Ser(17) Pro Glu Val Ile Glu Ser Pro Pro Glu Ile Asn Thr Val Glin Val Thr Ser Thr Ala Val (SBQ ID NO3),

Met Ala Ile Pro Pro Lys Lys Asn Glu Asp Lys Tlu lu Glu Ile Pro Tlu lu Ile Asn Tlu lu Ile Ala Ser(F) Gly Glu Pro Tlu lu Ser Tlu Pro Tlu Ile Glu Ala Val Glu Ser Tlu Val Ala Tlu Leu Glu Ala Ser(F) Pro Glu Val Ile Glu Ser Pro Pro Glu Ile Asn Tlu Val Glu Val Tlu Ser Tlu Ala Val (SEQ ID NO.4);

Met Ala IIe Pro Pro Lys Lys Asn Gin Asp Lys Thr Glu IIe Pro Thr IIe Asn Thr IIe Ala Ser Gly Glu Pro Thr Ser Thr Pro Thr Thr Glu Ala Val Glu Ser Thr Val Ala Thr Leu Glu Asp Ser(1) Pro Glu Val IIe Glu Ser Pro Pro Glu IIe Asn Thr Val Gln Val Thr Ser Thr Ala Val (SEQ ID NO:5);

Met Ala Ile Pro Pro Lys Lys Asn Gin Asp Lys Thr Glu Ile Pro Thr Ile Asn Thr Ile Ala Ser(P)

Gly Glu Pro Thr Ser Thr Pro Thr Glu Ala Val Glu Ser Thr Val Ala Thr Leu Glu Asp Ser(P)

Pro Glu Val Ile Glu Ser Pro Pro Glu Ile Asn Thr Val Gln Val Thr Ser Thr Ala Val (SEQ ID

NO6);

The Glu He Pro The He Asn The He Ala Ser Gly Glu Pro The Ser The Pro The He Glu Ala Val Glu Ser The Val Ala The Leu Glu Ala Ser(I) Pro Glu Val He Glu Ser Pro Pro Glu He Asn The Val Glu Val The Ser The Ala Val (SEQ ID NO.7);

The Glu He Pro The He Asn The He Ala Ser(F) Gly Glu Pro The Ser The Pro The He Glu Ala Val Glu Ser The Val Ala The Leu Glu Ala Ser(F) Pro Glu Val fle Glu Ser Pro Pro Glu fle Asn The Val Glu Val The Ser The Ala Val (SEQ ID NO:8);

The Glu He Pro The He Asn The He Ala Ser Gly Glu Pro The Ser The Pro The The Glu Ala Val Glu Ser The Val Ala The Leu Glu Asp Ser(F) Pro Glu Val He Glu Ser Pro Pro Glu He Asn The Val Gln Val The Ser The Ala Val (SEQ ID NO.9);

The Glu Ile Pro The Ile Asn The Ile Ala Ser(I) Gly Glu Pro The Ser The Pro The The Glu Ala Val Glu Ser The Val Ala The Leu Glu Asp Ser(I) Pro Glu Val Ile Glu Ser Pro Pro Glu Ile Asn The Val Gln Val The Ser The Ala Val (SEQ ID NO:10);

and conservative substitutions thereof.

- 5. (Previously presented) An antimicrobial composition according to claim 4 wherein the divalent cation is selected from the group comprising Zn<sup>2+</sup>, Ca<sup>2+</sup>, Cu<sup>2+</sup>, Ni<sup>2+</sup>, Co<sup>2+</sup>, Fe<sup>2+</sup>, Sn<sup>2+</sup>, Mn<sup>2+</sup>, SnF<sup>+</sup>, and CuF<sup>+</sup>.
- 6. (Previously presented) An antimicrobial composition according to claim 4 wherein the divalent cation is Ca<sup>2+</sup> or Zn<sup>2+</sup>.
  - 7. (Previously presented) An antimicrobial composition according to claim 6 wherein the

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composition has a molar ratio of the divalent cation to the peptide in the range of 0.5-15.0:1.0.

8. (Original) An antimicrobial composition according to claim 7 wherein the molar ratio of the divalent cation to the peptide is in the range of 0.5:1.0 to 4.0:1.0.

- 9. (Original) An antimicrobial composition according to claim 8 wherein the molar ratio of the divalent cation to the peptide is in the range of 1.0:1.0 to 4.0:1.0.
- 10. (Original) An antimicrobial composition according to claim 9 wherein the molar ratio of the divalent cation to the peptide is in the range of 1.0:1.0 to 2.0:1.0.
- 11. (Previously presented) A pharmaceutical composition comprising a composition according to claim 10 and a pharmaceutically acceptable carrier.
  - 12. (Currently amended) A method of treatment, comprising:

administering to a subject a therapeutically effective amount of a formulation <u>comprising</u> emprised of a carrier and composition comprising a divalent cation and a peptide, the peptide being non-glycosylated, less than about 100 amino acids, and comprising an amino acid sequence selected from the group consisting of:

-Ala Val Glu Ser Thr Val Ala Thr Leu Clu Ala Ser(F) Pro Glu Val Ile Glu Ser Pro Pro -Glu, (SEQ ID NO:1)

Ala Val Glu Ser Thr Val Ala Thr Leu Glu Asp Ser(I) Pro Glu Val Ile Glu Ser Pro Pro-Glu, (SEQ ID NO.2)

Ala Val Glu Ser Thr Val Ala Thr Leu Glu Ala Ser(P) Pro Glu Val Ile Glu Ser Pro Pro Glu (SEQ ID NO:1);

Ala Val Glu Ser Thr Val Ala Thr Leu Glu Asp Ser(P) Pro Glu Val Ile Glu Ser Pro Pro Glu (SEQ ID NO:2),

and conservative substitutions therein [[.]]; and

<u>and</u>

allowing the formulation to act on the subject in a manner which prevents a disease selected from the group consisting of dental caries and periodontal disease.

13. (Previously presented) The method of claim 12, wherein the administering is directly to the teeth

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· or gums of the subject.

14. (Previously presented) A method of claim 12, wherein the administering is by topical administration.

## 15. (Canceled)

- 16. (Previously presented) An antimicrobial composition according to claim 2 wherein the divalent cation is selected from the group comprising Zn<sup>2+</sup>, Ca<sup>2+</sup>, Cu<sup>2+</sup>, Ni<sup>2+</sup>, Co<sup>2+</sup>, Fe<sup>2+</sup>, Sn<sup>2+</sup>, Mn<sup>2+</sup>, SnF<sup>+</sup>, and CuF<sup>+</sup>.
- 17. (Previously presented) An antimicrobial composition according to claim 2 wherein the divalent cation is  $Ca^{2+}$  or  $Zn^{2+}$ .
- 18. (Previously presented) An antimicrobial composition according to claim 1 wherein the divalent cation is selected from the group comprising Zn<sup>2+</sup>, Ca<sup>2+</sup>, Cu<sup>2+</sup>, Ni<sup>2+</sup>, Co<sup>2+</sup>, Fe<sup>2+</sup>, Sn<sup>2+</sup>, Mn<sup>2+</sup>, SnF<sup>+</sup>, and CuF<sup>+</sup>.
- 19. (Previously presented) An antimicrobial composition according to claim 1 wherein the divalent cation is  $Ca^{2+}$  or  $Zn^{2+}$ .